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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,967	12/23/1999	Kunihito Seta	018976-154	6834

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EXAMINER

HECKENBERG JR, DONALD H

ART UNIT	PAPER NUMBER
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1722

20

DATE MAILED: 05/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .		Applicant(s)	
	09/470,967		SETA ET AL.	
	Examiner		Art Unit	
	Donald Heckenberg		1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-2, 4-7, 35-73 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,4-7,35 and 54-59 is/are allowed.
- 6) ☒ Claim(s) 36-53,60-66 and 70 is/are rejected.
- 7) ☒ Claim(s) 67-69 and 71-73 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 60-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Baigent (U.S. Pat. No. 3,080,610; previously of record).

Baigent discloses an injection molding machine. The molding machine comprises a plasticating unit (3) for plasticating a thermoplastic resin. An injection unit (10) connected to the plasticating unit through a connecting passage to inject the plasticated resin into the mold. A buffering chamber (13)¹ is provided for receiving the resin plasticated in the plasticating unit, the buffering unit located in a longitudinal direction of the plasticating unit (see figures 1-3).

¹ Note, figure 1 of Baigent incorrectly labels the buffering chamber '14' as '13'. Baigent discloses that the conduit as the structure between nozzle 3a and orifice 12 (see column 2, lines 42-71). Further evidence of the incorrect numbering can be seen the injection ram shown in figure 1 is also label with a 14 (see column 3, lines 7-22). In this Office Action, 13 will be used to denote the chamber, despite the numeration shown in figure 1. Thus, the chamber should be labeled 13, not 14 as is shown in figure 1.

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that

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was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 36-37, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over German Pub No. 197 18 174 (previously of record; hereinafter "DE '174") in view of Amano et al. (U.S. Pat. No. 5,773,042; previously of record). Note U.S. Pat. No. 5,925,295 (previously of record; hereinafter "U.S. '295") is an English language equivalent to DE '174.

DE '174 discloses an injection molding apparatus. The apparatus includes a plasticating unit (5) and an injection unit (8) connected to the plasticating unit through a connecting passage to inject the plasticated resin into the mold (the passage being marked 20 and 9 as shown in figure 3). A buffering unit (13) is provided receiving the resin plasticated during an injection by the injection unit (see U.S. '295 at column 2, lines 41-46). The buffering unit feeds a measured amount of resin held in the buffering chamber into the injection unit after injection by the injection unit (see U.S. '295 at column 2, lines 46-52). The buffering unit comprises a pot (12) and a plunger (11) disposed within the pot. The plunger moves forward

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and backward in the pot. A fluid pressure cylinder (29) is provided as a means to energize the plunger.

DE '174 does not disclose a pressure sensor for detecting a pressure in the buffering chamber to allow for control of the resin pressure in the buffering unit.

Amano teaches an injection molding apparatus comprising a buffering-accumulating chamber (70). The chamber is provided with pressure sensors (83 and 84) for the purpose of detecting and regulating the pressure in the chamber as desired in the molding process (column 9, lines 12-65).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have modified the apparatus of DE '174 to further comprise pressure sensors in the buffering chamber because this would allow for the detecting and regulating of the pressure in the chamber as suggested by Amano.

Claim 36 recites that the pressure sensor of the buffering chamber is used to keep the resin pressure constant in the buffering unit. This limitation is directed at the particular operating process of the apparatus, and thus, the intended use of the apparatus. It is well settled that the intended use of an apparatus is not germane to the issue of patentability of the apparatus. If the prior art structure is capable of performing

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the claimed use, then it meets the claim limitation(s). In re Casey, 370 F.2d 576, 580 152 USPQ 235, 238 (Cust. & Pat. App. 1967); In re Otto, 312 F.2d 937, 939, 136 USPQ 458, 459 (Cust. & Pat. App. 1963). In the instant case, Amano teaches a buffering unit pressure detection system, and further teaches the regulation of the pressure in the buffering unit based on the detecting pressure as described above. Therefore, the apparatus suggested by the combination of DE '174 and Amano is capable of operating in a manner wherein the pressure in the buffering unit is regulated to be constant, and therefore meets the apparatus claims of the instant invention.

7. Claims 42-43, 45, 47-49, 51, 53, 62-63, 65, and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baigent in view of Yabushita (U.S. Pat. No. 5,389,315; previously of record).

Baigent discloses an injection molding apparatus. The apparatus comprises a plasticating unit (3) for plasticating a thermoplastic resin, and an injection unit connected to the plasticating unit through a connecting passage (see figures 1 and 3). A buffering unit including a buffering chamber (13) is provided for receiving the resin plasticated in the plasticated unit. The buffering unit operates such that it receives resin

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plasticated in the plasticating unit during an injection by receiving resin through nozzle (3a), and further feeds an amount of resin from the chamber into the injection unit (see column 4, lines 30-33). Baigent also discloses a reciprocating screw (5) in the plasticating unit moved by means of a fluid pressure cylinder (60) and corresponding piston rod (see figure 3).

Baigent does not disclose a position detecting sensor for detecting the position of the piston rod attached to the plasticating screw to control the amount of resin input into the buffering chamber.

Yabushita discloses an injection molding apparatus. The apparatus is provided with a plasticating unit (30) and a screw (33). A position detecting sensor (34) is used to monitor the movement of a piston rod attached to the screw (see figure 1) for the purpose of controlling the amount of resin that is released out of the plasticating unit (see column 4, lines 52-58).

It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to have modified the apparatus of Baigent as such to have provided the plasticating screw with a position detecting sensor because this would allow for control of the amount of resin released from the plasticating unit as suggested by Yabushita. Accordingly, the

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senor in controlling the amount of resin released from the plasticating unit would thereby control the amount of resin released from the plasticating unit into the buffering unit.

8. Claims 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE '174 modified by Amano as applied to claims 36-37, 39, and 41 above, and further in view of Cheng (U.S. Pat. No. 5,098,267; previously of record).

DE '174 and Amano teach the apparatus as described above. DE '174 and Amano do not disclose the energizing means for the plunger to comprise a spring or an electric actuator as alternatives to the fluid pressure cylinder.

Cheng teaches an injection molding apparatus comprising an injecting plunger and plasticating screw (12), wherein the plunger is energized by a spring (18) or a mechanical device as an alternative to the fluid pressure cylinder (col. 3, lns. 62-65).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have modified the apparatus of DE '174 and Amano as such to have used a spring or a mechanical device such as an electric actuator as the energizing means for the injection plunger instead of a fluid pressure cylinder because these are suitable alternatives

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recognized in the art to provide the energizing force for the injection plunger as suggested by Cheng.

9. Claims 44, 46, 50, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baigent modified by Yabushita as applied to claims 42-43, 45, 47-49, 51, and 53 above, and further in view of Cheng.

DE '174 and Amano teach the apparatus as described above. DE '174 and Amano do not disclose the energizing means for the plunger to comprise a spring or an electric actuator as alternatives to the fluid pressure cylinder.

Cheng teaches an injection molding apparatus comprising an injecting plunger and plasticating screw (12), wherein the plunger is energized by a spring (18) or a mechanical device as an alternative to the fluid pressure cylinder (col. 3, lns. 62-65).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have modified the apparatus of DE '174 and Amano as such to have used a spring or a mechanical device such as an electric actuator as the energizing means for the injection plunger instead of a fluid pressure cylinder because these are suitable alternatives

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recognized in the art to provide the energizing force for the injection plunger as suggested by Cheng.

10. Claims 64 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baigent modified by Yabushita as applied to claims 62-63, 65, and 70 above, and further in view of Cheng.

Baigent and Yabushita disclose and suggest the apparatus as described above. Baigent and Yabushita do not disclose the energizing means for the plunger to comprise a spring or an electric actuator as alternatives to the fluid pressure cylinder.

Cheng teaches an injection molding apparatus comprising an injecting plunger and plasticating screw (12), wherein the plunger is energized by a spring (18) or a mechanical device as an alternative to the fluid pressure cylinder (col. 3, lns. 62-65).

It would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to have modified the apparatus of Baigent and Yabushita as such to have used a spring or a mechanical device such as an electric actuator as the energizing means for the injection plunger instead of a fluid pressure cylinder because these are suitable alternatives

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recognized in the art to provide the energizing force for the injection plunger as suggested by Cheng.

11. Applicant's arguments filed on February 24, 2003 with respect to claims 36-53 have been considered, but are not persuasive.

Applicant argues that DE '174 (as set forth in U.S. '295) merely discloses that molten resin is accumulated in the stock chamber (12) during a measuring step. Applicant asserts that nothing in the reference teaches or suggests a buffering unit receiving resin during an injection by the injection unit as recited in the claims of the instant application.

Applicant's reading of the reference is not correct. In the U.S. '295 it is taught "during the injection step, by closing the switching valve, the molten resin discharged from the plasticizing device is accumulated in the stock chamber of the accumulation device, and injection is performed by driving the second screw forward in the injection device" (column 2, lines 41-46). The reference therefore clearly teaches the buffering unit is accumulated in the stock chamber during injection by the injection unit.

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Applicant argues, with respect to claim 36, that nothing in Almano teaches or suggests a buffering unit receiving the plasticated resin during an injection by the injection unit.

As set forth above, DE '174 discloses this feature. Therefore, the fact the secondary reference used in the rejection does not disclose this feature is irrelevant. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986); In re Keller, 642 F.2d 413, 208 USPQ 871 (Cust. & Pat. App. 1981).

Applicant also argues, with respect to claim 36, that the combination of DE '174 and Amano does not teach or suggest a pressure detecting sensor to control the resin pressure in the buffering unit to be constant.

As set forth above, this limitation is directed at the intended operating process of the apparatus. Although DE '174 and Amano do not disclose the apparatus is to be operated in such a manner that the resin pressure in the buffering unit is kept constant, the apparatus suggested by the two references is capable of operating in such a manner, and therefore meets the apparatus claim limitations of the instant application.

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With respect to claims 42-43, 45, 47-49, 51 and 53, Applicant argues that Baigent does not teach or suggest a buffering unit receiving plasticized resin during an injection by the injection unit. Applicant asserts that as the chamber (13) of Baigent is connected between a nozzle (3A) and the inlet orifice (12), the conduit will not receive the resin until the plasticating screw (3) is moved forward, thus the chamber (13) will not receive resin during the injection step.

Applicant characterization of the way that the apparatus of Baigent operates does not appear to be correct. The nozzle (3A) and inlet orifice (12) at the ends of the buffering chamber (13) are merely openings. This must be so in order for the resin to move from the plasticating unit to the mold, and there is no disclosure of a valve or similar structure blocking the openings at any time. Therefore, as resin is plasticized it would inherently move through the nozzle (3A) into the chamber (13) regardless of the stage in the operating process of the apparatus. Although Baigent does not explicitly state that this occurs, there is nothing disclosed that suggests the resin would not move through nozzle (3A) into the chamber (13) during all steps of the molding operation. The disclosure of the movement of screw (5) pushing the resin into the injection unit merely indicates the resin in the plasticating unit (3) and chamber

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(13) is forced into the injection unit at that time, not that the all resin would remain in the plasticating unit (and not the chamber 13) before this step.

Applicant notes that Baigent discloses an extension conduit (13), but argues that nothing in Baigent teaches or suggests a buffering unit as recited in the claims of the instant application.

Although Baigent does not call the conduit a "buffering chamber," as more fully described above, the structure acts as an intermediate resin holding structure between plasticating unit and the injection unit. Thus, the chamber (13) of Baigent is a "buffering chamber," and therefore anticipates the structure recited in the claims of the instant application as set forth above.

With respect to claims 42 and 48, Applicant argues that Baigent does not teach or suggest a position detecting sensor detecting the position of the screw or piston rod to control the amount of resin input in the buffering unit.

As set forth above, the feature of the position detecting sensor is suggested by the Yabushita reference. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re

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Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986); In re Keller, 642 F.2d 413, 208 USPQ 871 (Cust. & Pat. App. 1981).

At p. 11, lines 3-6 of Applicant's response, Applicant notes that Yabushita discloses "[t]he amount of the resin material supplied to each of the valve gates 13 is controlled according to displacement of the in-line screw 33 in view of the fact that the position of in-line screw 33 can be accurately detected." However, Applicant asserts that nothing in Yabushita teaches or suggests a position detecting sensor detecting a position of a screw to control the amount of resin into to a buffering chamber as recited in claims 42 and 48, rather that the positional sensor is used open and close valve gates.

The language recited in claims 42 and 46 requires only a position detecting sensor and controlling the amount of resin input into the buffering chamber based upon detected position. Thus, the effect of the position sensor of Yabushita and noted by Applicant, and described above, of controlling the amount of resin based on the position of the screw meets the limitations of the claims of the instant application, regardless Yabushita's use of the valves. Note, the claims of the instant application use "comprising" terminology which is open-ended and does not exclude additional, unrecited elements. See MPEP § 2111.03.

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12. Claims 67-69 and 71-73 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 1-2, 4-7, 35, and 54-59 are allowed.

14. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest a thermoplastic resin injection molding machine comprising a plasticating unit for plasticating thermoplastic resin; an injection unit connected to the plasticating unit through a connecting passage, to inject the plasticated resin into a mold; a buffering unit having a buffering chamber having a volume at least equal to the injection quantity of resin per shot, the buffering unit receiving the resin plasticated in the plasticating unit during an injection by the injection unit, the buffering unit feeding a measured amount of the resin held in the buffering chamber into the injection unit after injection by the injection unit, and (a) a plunger reciprocatably in the buffering unit and a detecting sensor detecting a position of the plunger as recited in claim 1, or (b) the buffering chamber

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provided in the plasticating unit and a pressure sensor detecting a pressure in the buffering chamber wherein resin pressure is controlled to be constant in the buffering chamber based upon detected pressure as recited in claim 54.

The prior art of record also does not teach or suggest a thermoplastic resin injection molding machine comprising a plasticating unit for plasticating thermoplastic resin, an injection unit connected to the plasticating unit through a connecting passage to inject the plasticated resin into a mold, a buffering unit having a buffering chamber and receiving the resin plasticated in the plasticating unit, wherein the plasticating unit is located in a longitudinal direction of the plasticating unit, and either (a) further comprising a reciprocating screw provided in the plasticating unit, a position detecting sensor detecting a position of the reciprocating screw to control an amount of resin input into the buffering unit and a pressure sensor detecting a pressure in the buffering unit as recited in claim 67, or (b) further comprising a screw contained in the plasticating unit and a pressure detecting sensor detecting the pressure in the buffering unit as recited in claim 68.


The closest prior art taught by DE '174 and Baigent is discussed above. Nothing in these two references themselves, or


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in any combination with the secondary references, teaches or suggests the combination of features recited in the indicated allowable claims.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald Heckenberg whose telephone number is (703) 308-6371. The examiner can normally be reached on Monday through Friday from 9:30 A.M. to 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at (703) 308-0457. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 for responses to non-final action, and 703-872-9311 for responses to final actions. The unofficial fax phone number is (703) 305-3602.


Donald Heckenberg
May 12, 2003


JAMES P. MACKEY
PRIMARY EXAMINER
5/13/03